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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,160	03/06/2006	Curt Horvath	58218US	9068

23911 7590 08/20/2008

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EXAMINER	
MARVICH, MARIA	
ART UNIT	PAPER NUMBER
1633	
MAIL DATE	DELIVERY MODE
08/20/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,160	HORVATH ET AL.	
	Examiner	Art Unit	
	MARIA B. MARVICH	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) *1-4 and 9-47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to an amendment filed 5/29/08. Claim 1-47 are pending.

Election/Restrictions

Applicant's election of Group II (Claims 5-8) in the reply filed on 5/29/08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-4 and 9-47 are withdrawn from consideration as being drawn to nonelected inventions, Claims 5-8 are examined herein.

Sequence Compliance

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. Specifically figures 4A-B, 5 and 6A-b contain sequences that are not identified by sequence identifier numbers. If the sequences can be found in the sequence listing it would be remedial to insert the appropriate SEQ ID NO:s. If not, a substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification, CRF and letter stating that the

contents of the sequence listing and the CRF are the same and contain no new matter is required. **The nature of the non-compliance did not preclude the examination on the merits of the instant application, the results of which follow.**

Claim Objections

Claim 5 is objected to because of the following informalities: Claim 5 is drawn to non elected subject matter. Appropriate correction is required.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of modulating STAT3 mediated signaling in a cell *in vitro* wherein the method comprises contacting the cell with a viral or lentivirus vector comprising SEQ ID NO:2, does not reasonably provide enablement for any other embodiment. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The test of enablement is whether one skilled in the art could make and use the claimed invention from the disclosures in the patent coupled with information known in the art without undue experimentation (*United States v. Telectronics, Inc.*, 8 USPQ2d 1217 (Fed. Cir. 1988)).

Whether undue experimentation is required is not based on a single factor but is rather a conclusion reached by weighing many factors (See *Ex parte Forman*, 230 USPQ 546 (Bd. Pat. App. & Inter, 1986) and In *re Wands*, 8USPQ2d 1400 (Fed. Cir. 1988); these factors include the following:

The instant claims are drawn to a method of decreasing the level of STAT3 in the cell to result in modulation of STAT3 signaling. "[0217] The constitutively activated STAT3 found in many human cancers often functions in a survival role for tumor maintenance, and inhibition of STAT3 has been demonstrated to induce apoptosis in tumor cells. Malignant transformation of cultured murine fibroblasts by v-Src requires functional STAT3 signaling (Bromberg, J. et al., Cell. Biol. 18:2553-2558 (1998)). Similarly, growth and survival of human myeloma tumor cells depends on IL6-mediated STAT3 signaling. The human U266 myeloma cell line possesses an autocrine IL6 self-stimulatory loop that produces constitutively activated STAT3. In these cancer cells, disruption of STAT3 signaling induces spontaneous apoptosis (Catlett-Falcone, R. et al., Immunity 10:105-115 (1999))." Applicants have identified mumps viral V protein (SEQ ID NO:2), which has about 42% amino acid identity with SV5 and about 37% identity with HPIV2. Experimentally, V protein was shown to block signal transduction in 293T cells from IFN, IL6, cytokines and v-SRC. As well, V protein effects STAT1 and 3 levels in the cell. Applicants state that the ability to lower STAT3 is unique to Mumps V protein. (see ¶ 207). Furthermore, Mumps V activity is not restricted by murine and human STAT2 differences (¶213) as is SV5. Hence applicants propose use of Mumps V protein as a potential therapeutic in treatment of cancer.

The MPEP teaches, "However, claims reading on significant numbers of inoperative embodiments would render claims non-enabled when the specification does not clearly identify the operative embodiments and undue experimentation is involved in determining those that are operative. Atlas Powder Co. v. E.I. duPont de Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984); In re Cook, 439 F.2d 730, 735, 169 USPQ 298, 302 (CCPA 1971). (see MPEP 2164.08(b). In this case, the invention is drawn quite broadly to modulation of STAT3 mediated signaling in *any* cell and based upon the disclosure it is clear that target cells *in vivo* are intended. The ability to perform this method *in vitro* and *in vivo* to modulate STAT3 in *any* cell is highly unpredictable. Gene delivery has been a persistent problem for gene therapy protocols and the route of delivery itself presents an obstacle to be overcome for the application of the vector therapeutically. Opalinska et al. state on page 511 "[I]t is widely appreciated that the ability of nucleic-acid molecules to modify gene expression in vivo is quite variable, and therefore wanting in terms of reliability. Several issues have been implicated as a root cause of this problem, including molecule delivery to targeted cells and specific compartments within cells and identification of sequence that is accessible to hybridization in the genomic DNA or RNA" and in column 2 of the same page, "Another problem in this field is the limited ability to deliver nucleic acids into cells and have them reach their target. Without this ability, it is clear that even an appropriately targeted sequence is not likely to be efficient. As a general rule, oligonucleotides are taken up primarily through a combination of adsorptive and fluid-phase endocytosis. After internalization, confocal and electron microscopy studies have indicated that the bulk of the oligonucleotide enter the endosome-lysosome .compartment, in which most of the material becomes either trapped or degraded. Verma et al (Verma and Somia, Nature,

September 1997) teach, "The Achilles heel of gene therapy is gene delivery.., the problem has been an inability to deliver genes efficiently and to obtain sustained expression". Vector tropism, the duration of transgene expression and vector immunogenicity are other factors that influence the suitability of a vector for specific therapeutic applications (see Thomas, page 348, col 2). "Lentiviral transduction of muscle and liver has also been shown in animals, but, interestingly, studies in the liver have indicated that not all non-dividing cells are equally susceptible to transduction by lentivirus vectors; some cell types (such as the hepatocyte) might require cell cycling for efficient gene transfer *in vivo* (see Thomas, page 348, col 2)." The unpredictability of gene delivery and expression is exacerbated by the lack of direction in the specification as to cells targeted or sites of delivery *in vivo*. The disclosure is limited to *in vitro* introduction of SEQ ID NO:2 into cells followed by analysis of nuclear translocation, STAT3 levels, cytokine and oncogene signaling activation. Though not controlling, the lack of working examples, is, nevertheless, a factor to be considered in a case involving both physiological activity and an undeveloped art. When a patent applicant chooses to forego exemplification and bases utility on broad terminology and general allegations, he runs the risk that unless one with ordinary skill in the art would accept the allegations as obviously valid and correct, the examiner may, properly, ask for evidence to substantiate them. Ex parte Sudilovsky, 21 USPQ2d 1702, 1705 (BPAI 1991); In re Novak, 134 USPA 335 (CCPA 1962); In re Fouche, 169 USPQ 429 (CCPA 1971). In this case, the lack of exemplification and guidance regarding *in vivo* use exacerbates an unpredictable art.

Secondly, the claims are drawn to a large and potentially diverse genus of sequences. Further, it was well known in the art that nucleotide sequences encode a protein whose sequence

determines it's structural and functional properties, and predictability of which sequences can be altered and still result in similar activity is extremely complex, and well outside the realm of routine experimentation, because accurate predictions of a protein's structure from mere sequence data are limited. Applicants identify human V protein from mumps virus but have not provided the structural requirements of the sequence nor the functional properties that are required of any sequence that is isolated by hybridization nor required to identify any homologues or variants. The court and the Board have repeatedly held (Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.,18 USPQ2d 1016 (CA FC, 1991); Fiers v. Revel, 25 USPQ2d 1601 (CA FC 1993); Fiddes v. Baird, 30 USPQ2d 1481 (BPAI 1993) and Regents of the Univ. Calif. v. Eli Lilly & Co., 43 USPQ2d 1398 (CA FC, 1997)) that an adequate written description of a nucleic acid requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it, irrespective of the complexity or simplicity of the method; what is required is a description of the nucleic acid itself. It is not sufficient to define DNA solely by its principal biological property, because disclosure of no more than that, as in the instant case, is simply a wish to know the identity of any DNA with that biological property. Naming a type of material generically known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material. When one is unable to envision the detailed constitution of a complex chemical compound having a particular function, such as a nucleic acid, so as to distinguish it from other materials, as well as a method for obtaining it, conception has not been achieved until reduction to practice has occurred, i.e., until after the nucleic acid has been isolated. Thus, claiming all DNA's that achieve a result without defining what means will do so is not in compliance with the description requirement. Rather, it is an attempt to preempt the

future before it has arrived. Also, where a claim purports to cover all nucleic acids that encode a specific protein and the specification discloses but a single DNA known to do so, the situation is analogous to a single means claim and does not meet the enablement requirement under para. 1 of §112.

The specification provides one sequence for Mump V protein without identifying relevant characteristics or structural-functional relationships. Thus neither the specification nor the prior art teach the structural requirements of sequences that are homologues, variants or hybridize to SEQ ID NO:1. The guidance in the specification does not detail the encoded peptides to be used as to structural or physical characteristics. It is not clear what if any of the encoded by SEQ ID NO:2 are required. Furthermore, the ability to determine *a priori* whether a homologue or variant can function in the recited invention is not a high art. A particular protein sequence determines the protein's structural, and functional properties, and a predictability of a representative number of claimed polypeptide sequences that display noteworthy biological properties requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e., expectedly intolerant to modification), and detailed knowledge of the ways in which a protein's structure relates to its functional usefulness (see Guo et al and Lesk et al). Therefore, the ability to predict *a priori* which sequences that are identified following hybridization will meet a particular goal must be considered to be poorly developed. Given the large size and diversity of the recited sequences, the absence of disclosed or art recognized correlations between structure and function and the large number of potential sequences or homologues, variants, and related sequences, it must be considered that any sequence with the ability to modulate STAT must be empirically

determined. In view of predictability of the art to which the invention pertains and the lack of guidance in the specification: undue experimentation would be required to practice the claimed methods with reasonable expectation of success, absent a specific and detailed description in the specification. Given the above analysis of the factors which the courts have determined are critical in determining whether a claimed invention is enabled, it must be concluded that the skilled artisan would have had to have conducted undue unpredictable experimentation in order to practice the claimed invention.

The scope of the invention is extremely broad in that the claims are drawn to modulation of *any* part of STAT signaling in *any* cell using a large genus of proteins with at least about 80% identity. Given the unpredictability of the art, the poorly developed state of the art with regard to predicting the structural/ functional characteristics of antagonists, the lack of adequate working examples and the lack of guidance provided by applicants, the skilled artisan would have to have conducted undue, unpredictable experimentation to practice the claimed invention.

Claims 5-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 5-8 are drawn use of SEQ ID NO:2 or sequences with at least 80% identity to SEQ ID NO:2. Applicants do not provide written description of sequences with at least 80% identity that can function as STAST inhibitors.

The written description requirement for genus claims may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant identifying characteristics, i.e. structure or other physical and/or chemical properties, by functional characteristics coupled with known or disclosed correlations between function and structure, or by a combination of such characteristics sufficient to show that the applicant was in possession of the claimed genus.

The instant claims are drawn to SEQ ID NO:2 and sequences with at least 80% identity however, the specification only discloses SEQ ID NO:2 but do not disclose what structural requirements of these molecules for use in the invention. In the case of SEQ ID NO:2 it is not clear what sequences are required of the sequences to meet applicants disclosed objectives. Therefore, there is no disclosure of a structure-function relationship between the sequence of SEQ ID NO 2. While one of skill in the art can readily envision numerable species of nucleic acid sequences that are at least a given % identity to a reference nucleotide sequence and that encode a polypeptide at least a given % identity to a recited reference amino acid sequence, one cannot envision which of these also encode a polypeptide with a specified activity. The fact remains that the actual nucleic acid sequences which encode a protein with a particular activity or the actual amino acid sequences of such a protein cannot be envisioned any better when the possible choices are narrowed from all possible sequences to all possible sequences with an arbitrary structural relationship with a known functional sequence. For example, if one skilled in the art were to make a synthetic nucleotide sequence that encoded a polypeptide with 80% identity to the reference amino acid sequence, he would be no more able to say whether it encoded a mumps V than if the nucleotide sequence encoded a polypeptide that was only 10%

identical to the reference polypeptide sequence. Nor would he be able to say whether the sequence existed in nature.

Given the large size and diversity of fragments that are related by 80% to SEQ ID NO: and the inability to determine which will also have the essential element, it is concluded that the invention must be empirically determined. In an unpredictable art, the disclosure of no species would not represent to the skilled artisan a representative number of species sufficient to show applicants were in possession of claimed genus.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Clarke et l (US 2007/0258997; see entire document).

Clarke et al teach introduction of mumps virus comprising V protein that is then introduced into a cell (see e.g. ¶ 0014) for example 293 cells, which as demonstrated by the instant application comprise STAT3 that is inhibited by V protein. V protein disclosed in Clarke et al is the same as that of SEQ ID NO:2.

```
RESULT 5
US-11-823-309-1
; Sequence 1, Application US/11823309
; Publication No. US20070258997A1
; GENERAL INFORMATION:
;  APPLICANT: American Home Products Corporation
;  APPLICANT:  Clarke, David K
;  APPLICANT:  Johnson, Erik J
;  APPLICANT:  Mohinderjit, Sidhu S
;  APPLICANT:  Udem, Stephen A
;  TITLE OF INVENTION: Rescue of Mumps Virus from cDNA
;  FILE REFERENCE: AM100070-PCT(SEQ)
;  CURRENT APPLICATION NUMBER: US/11/823,309
;  CURRENT FILING DATE:  2007-07-09
;  PRIOR APPLICATION NUMBER: not assigned
;  PRIOR FILING DATE: 2000-08-02
;  PRIOR APPLICATION NUMBER: 60/146664
;  PRIOR FILING DATE: 1999-08-02
;  PRIOR APPLICATION NUMBER: 60/213654
;  PRIOR FILING DATE: 2000-06-23
;  NUMBER OF SEQ ID NOS: 12
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 15384
;   TYPE: DNA
;   ORGANISM: Mumps virus
US-11-823-309-1

  Query Match             97.2%;  Score 655.8;  DB 29;  Length 15384;
  Best Local Similarity   98.2%;  Pred. No. 1.8e-205;
  Matches  663;  Conservative    0;  Mismatches   12;  Indels    0;  Gaps
0;

Qy          1 ATGGATCAATTTATAAAACAGGATGAGACTGGTGATTTAATTGAGACAGGAATGAATGTT 60
              ||||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
Db       1979 ATGGATCAATTTATAAAACAGGATGAGACCGGTGATTTAATTGAGACAGGAATGAATGTT
2038

Qy         61 GCAAATCATTTCCTATCCGCCCCCATTCAGGGAACCAACTCGCTGAGCAAGGCCTCAATC
120
              || ||||||||||||||| |||| |||||||||||||| ||||||||||||||||||||||
Db       2039 GCGAATCATTTCCTATCCACCCCAATTCAGGGAACCAATTCGCTGAGCAAGGCCTCAATC
2098

Qy        121 ATCCCTGGCGTTGCACCTGTACTCATTGGCAATCCAGAGCAAAAGAACATTCAGCACCCT
180
               ||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2099 CTCCCTGGTGTTGCACCTGTACTCATTGGCAATCCAGAGCAAAAGAACATTCAGCACCCT
2158

Qy        181 ACCGCATCACATCAGGGATCCAAGTCAAAGGGCAGCGGCTCAGGGGTCAGGTCCATCATA
240
              |||||||||||||||||||||||| |||||||||| |||||||| ||||||||||||||||
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Db       2159 ACCGCATCACATCAGGGATCCAAGACAAAGGGCAGAGGCTCAGGAGTCAGGTCCATCATA
2218

Qy        241 GTCCCACCCTCCGAAGCAGGCAATGGAGGGACTCAGATTCCTGAGCCCCTTTTTGCACAA
300

             ||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2219 GTCTCACCCTCCGAAGCAGGCAATGGAGGGACTCAGATTCCTGAGCCCCTTTTTGCACAA
2278

Qy        301 ACAGGACAGGGTGGTATAGTCACCACAGTTTATCAGGATCCAACTATCCAACCAACAGGT
360

             |||||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db       2279 ACAGGACAGGGTGGTATAGTCACCACAGTTTACCAGGATCCAACTATCCAACCAACAGGT
2338

Qy        361 TCATACCGAAGTGTGGAATTGGCGAAGATCGGAAAAGAGAGAATGATTAATCGATTTGTT
420

             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2339 TCATACCGAAGTGTGGAATTGGCGAAGATCGGAAAAGAGAGAATGATTAATCGATTTGTT
2398

Qy        421 GAGAAACCTAGAACCTCAACGCCGGTGACAGAATTTAAGAGGGGGGCCGGGAGCGGCTGC
480

             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2399 GAGAAACCTAGAACCTCAACGCCGGTGACAGAATTTAAGAGGGGGGCCGGGAGCGGCTGC
2458

Qy        481 TCAAGGCCAGACAATCCAAGAGGAGGGCATAGACGGGAATGGAGCCTCAGCTGGGTCCAA
540

             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2459 TCAAGGCCAGACAATCCAAGAGGAGGGCATAGACGGGAATGGAGCCTCAGCTGGGTCCAA
2518

Qy        541 GGAGAGGTCCGGGTCTTTGAGTGGTGCAACCCTATATGCTCACCTATCACTGCCGCAGCA
600

             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2519 GGAGAGGTCCGGGTCTTTGAGTGGTGCAACCCTATATGCTCACCTATCACTGCCGCAGCA
2578

Qy        601 AGATTCCACTCCTGCAAATGTGGGAATTGCCCCGCAAAGTGCGATCAGTGCGAACGAGAT
660

             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2579 AGATTCCACTCCTGCAAATGTGGGAATTGCCCCGCAAAGTGCGATCAGTGCGAACGAGAT
2638

Qy        661 TATGGACCTCCTTAG 675
              ||||||||||||||
Db       2639 TATGGACCTCCTTAG 2653
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Claims 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al (Biochemical and Biophysical Research Communications **283,** 255–259 (2001) as evidenced by Clarke et l (US 2007/0258997; see entire document).

Kubota et al teach cloning and expression of V protein in cells. The activity inherently of V protein is to inhibit STAT3 and hence absent evidence to the contrary despite the lack of detection of STAT3 levels, the method of Kubota et al inherently is accompanied by STAT3 decrease and hence modulation of STAT signaling. While Kubota et al does not provide the sequence of V protein, it is known in the art that the sequence is as provided by Clarke et al above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Kubota et al (Biochemical and Biophysical Research Communications **283,** 255–259 (2001) or Clarke et l (US 2007/0258997; see entire document) in view of see entire document).

Applicants claim a lentivirus vector encoding V protein of SEQ ID NO:2 that are expressed inc ells to inhibit STAT signaling.

The teachings of Kubota and Clarke et al are described above and are applied as before except neither teaches use of a lentivirus vector to clone the mumps genome or V protein.

Quinonez et al teach use of lentiviral vectors for delivery to cells (see e.g. page 943)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the vector used in boat and Clarke et al with the lentivirus vectors taught by Quinonez et al because Clarke and Kubota et al teach that it is within the ordinary skill of the art to construct recombinant vectors comprising V protein and because Quinonez et al et al teach that it is within the ordinary skill of the art to use lentivirus vector to introduce sequences into cells. As an initial point, KSR forecloses the argument that a specific teaching, suggestion or motivation is required to support a finding of obviousness. See the recent Board decision Exparte Smith --USPD2d--., slip op. at 20, (BD. Pat. App. & Interfer. June 25, 2007). it is within the ordinary skill of the art to use available methodologies to isolate a variety of vectors comprising any of a number of deletions that resulting E1 inactivation. One would have been motivated to use lentivirus, which was well known in the art to function as gene delivery vectors by applying conventional methodologies for predictable results. As well, one would have been motivated by the ability to transducer non dividing cells as well as a wide variety of cells (see page 943). Based upon the teachings of the cited references, the high skill of one of ordinary skill in the art, and absent evidence to the contrary, there would have been a reasonable expectation of success to result in the claimed invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA B. MARVICH whose telephone number is (571)272-0774. The examiner can normally be reached on M-F (7:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, PhD can be reached on (571)-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Maria B Marvich, PhD
Examiner
Art Unit 1633

/Maria B Marvich, PhD/
Primary Examiner, Art Unit 1633